

<b>AWARD/CONTRACT</b>		<b>1. This Contract Is A Rated Order Under DPAS (15 CFR 700)</b>		<b>Rating</b> DOA4		<b>Page</b> 1 <b>Of</b> 26	
<b>2. Contract (Proc. Inst. Ident) No.</b> DAAE07-03-C-L150		<b>3. Effective Date</b> 2003DEC16		<b>4. Requisition/Purchase Request/Project No.</b> SEE SCHEDULE			
<b>5. Issued By</b> TACOM WARREN BLDG 231 AMSTA-AQ-ABGD PAUL VESELENAK (586)574-7632 WARREN, MICHIGAN 48397-5000  HTTP://CONTRACTING.TACOM.ARMY.MIL  <b>e-mail address:</b> VESELENP@TACOM.ARMY.MIL		<b>Code</b> W56HZV		<b>6. Administered By (If Other Than Item 5)</b> DCMA GRAND RAPIDS RIVERVIEW CENTER BLDG 678 FRONT ST., NW GRAND RAPIDS, MI 49504-5352  <b>SCD</b> C <b>PAS</b> NONE <b>ADP</b> PT HQ0337		<b>Code</b> S2303A	
<b>7. Name And Address Of Contractor (No. Street, City, County, State, And Zip Code)</b> THERMOANALYTICS, INC. 23440 AIRPARK BLVD. P.O. BOX 66 CALUMET, MI. 49913-0066  TYPE BUSINESS: Other Small Business Performing in U.S.				<b>8. Delivery</b> <input type="checkbox"/> FOB Origin <input checked="" type="checkbox"/> Other (See Below) SEE SCHEDULE			
				<b>9. Discount For Prompt Payment</b>			
				<b>10. Submit Invoices (4 Copies Unless Otherwise Specified)</b>			<b>Item</b> 12
<b>Code</b> 06NK7		<b>Facility Code</b>		<b>To The Address Shown In:</b>			
<b>11. Ship To/Mark For</b> SEE SCHEDULE		<b>Code</b>		<b>12. Payment Will Be Made By</b> DFAS - COLUMBUS CENTER DFAS-CO/NORTH ENTITLEMENT OPERATION P.O. BOX 182266 COLUMBUS OH 43218-2266		<b>Code</b> HQ0337	
<b>13. Authority For Using Other Than Full And Open Competition:</b> <input type="checkbox"/> 10 U.S.C. 2304(c)( ) <input type="checkbox"/> 41 U.S.C. 253(c)( )				<b>14. Accounting And Appropriation Data</b> ACRN: AA 21 42040000046N6N7EP665502255Y S20113 W56HZV			
<b>15A. Item No.</b> SEE SCHEDULE	<b>15B. Schedule Of Supplies/Services</b> CONTRACT TYPE: Cost-Plus-Fixed-Fee		<b>15C. Quantity</b>	<b>15D. Unit</b>	<b>15E. Unit Price</b>	<b>15F. Amount</b>	
				KIND OF CONTRACT: Research and Development Contracts			
<b>15G. Total Amount Of Contract</b>						\$364,737.00	
<b>16. Table Of Contents</b>							
(X)	Section	Description	Page(s)	(X)	Section	Description	Page(s)
Part I - The Schedule				Part II - Contract Clauses			
X	A	Solicitation/Contract Form	1	X	I	Contract Clauses	16
X	B	Supplies or Services and Prices/Costs	2	Part III - List Of Documents, Exhibits, And Other Attachments			
X	C	Description/Specs./Work Statement	6	X	J	List of Attachments	26
X	D	Packaging and Marking	9	Part IV - Representations And Instructions			
X	E	Inspection and Acceptance	10		K	Representations, Certifications, and Other Statements of Offerors	
X	F	Deliveries or Performance	11				
X	G	Contract Administration Data	12		L	Instrs., Conds., and Notices to Offerors	
X	H	Special Contract Requirements	14		M	Evaluation Factors for Award	
Contracting Officer Will Complete Item 17 Or 18 As Applicable							
<b>17.</b> <input checked="" type="checkbox"/> Contractor's Negotiated Agreement (Contractor is required to sign this document and return 2 signed copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)				<b>18.</b> <input type="checkbox"/> Award (Contractor is not required to sign this document.) Your offer on Solicitation Number _____ including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.			
<b>19A. Name And Title Of Signer (Type Or Print)</b>				<b>20A. Name Of Contracting Officer</b> JOHN M. HOPFNER HOPFNERJ@TACOM.ARMY.MIL (586)574-7070			
<b>19B. Name of Contractor</b>  By _____ (Signature of person authorized to sign)		<b>19c. Date Signed</b>		<b>20B. United States Of America</b>  By _____ /SIGNED/ (Signature of Contracting Officer)		<b>20C. Date Signed</b> 2003DEC16	

**Name of Offeror or Contractor:** THERMOANALYTICS, INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT									
	SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS													
0001	<p><u>THERMAL MANAGEMENT</u></p> <p>NOUN: THERMAL MANAGEMENT SECURITY CLASS: Unclassified</p> <p>The contractor shall furnish all the supplies and services required to accomplish the tasks set forth in the Section C Scope of Work.</p> <p>The total amount of CLIN 0001, which will be incrementally funded as stated in Clause B.3 entitled "Funding" will consist of the following amounts of estimated cost and fixed fee.</p> <p>Estimated Cost = \$688,182.68 Fixed Fee = \$ 41,290.96</p> <p>Total Amount = \$729,473.64</p> <p>(End of narrative B001)</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination      ACCEPTANCE: Destination</p> <p><u>Deliveries or Performance</u></p> <table><tr><td>DLVR SCH</td><td></td><td>PERF COMPL</td></tr><tr><td><u>REL CD</u></td><td><u>QUANTITY</u></td><td><u>DATE</u></td></tr><tr><td>001</td><td>1</td><td>01-DEC-2005</td></tr></table> <p>\$ 729,473.64</p>	DLVR SCH		PERF COMPL	<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>	001	1	01-DEC-2005	1	LO		\$ 729,473.64
DLVR SCH		PERF COMPL												
<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>												
001	1	01-DEC-2005												
000101	<p><u>THERMAL MANAGEMENT</u></p> <p>NOUN: FY04 PHII SBIR THERMOANALYTIC PRON: E142C017EH      PRON AMD: 01      ACRN: AA AMS CD: 665502M4055 (AMOUNT: \$ 364,737.00)</p>													
0002	<p><u>DATA ITEM</u></p> <p>SECURITY CLASS: Unclassified</p>													

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Name of Offeror or Contractor: THERMOANALYTICS, INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
A001	<p><u>DATA ITEM</u></p> <p>NOUN: PROGRESS &amp; STATUS REPORTS SECURITY CLASS: Unclassified</p> <p>Progress &amp; Status Reports in accordance with Provisions C.3.3, C.5.1 and Data Item A001, Exhibit A, of the contract.</p> <p>(End of narrative B001)</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination      ACCEPTANCE: Destination</p>			\$ ** NSP **	\$ ** NSP **
A002	<p><u>DATA ITEM</u></p> <p>NOUN: SCIENTIFIC &amp; TECH REPORT SECURITY CLASS: Unclassified</p> <p>Final Report in accordance with Provisions C.3.4, C.5.1 and Data Item A002, Exhibit A, of the contract.</p> <p>(End of narrative B001)</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination      ACCEPTANCE: Destination</p>			\$ ** NSP **	\$ ** NSP **
A003	<p><u>DATA ITEM</u></p> <p>NOUN: MEETING MINUTES SECURITY CLASS: Unclassified</p> <p>Meeting Minutes in accordance with Provisions C.3.1, C.3.2, C.5.3 and Data Item A003, Exhibit A, of the contract.</p> <p>(End of narrative B001)</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination      ACCEPTANCE: Destination</p>			\$ ** NSP **	\$ ** NSP **
A004	<p><u>DATA ITEM</u></p> <p>NOUN: BRADLEY M2 MODEL SECURITY CLASS: Unclassified</p> <p>Bradley M2 computer Model, in accordance with</p>			\$ ** NSP **	\$ ** NSP **

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Name of Offeror or Contractor: THERMOANALYTICS, INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
A005	<p>Provisions C.2.6, C.5.4, and Data Item A004, Exhibit A, of the contract.</p> <p>(End of narrative B001)</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination      ACCEPTANCE: Destination</p> <p><u>DATA ITEM</u></p> <p>NOUN: FCS MODEL SECURITY CLASS: Unclassified</p> <p>Future Combat Systems computer model, in accordance with Provision C.2.7, C.5.5, and Data Item A005, Exhibit A.</p> <p>(End of narrative B001)</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination      ACCEPTANCE: Destination</p>			<p>\$ ** NSP **</p>	<p>\$ ** NSP **</p>
A006	<p><u>DATA ITEM</u></p> <p>NOUN: PRESENTATION MATERIALS SECURITY CLASS: Unclassified</p> <p>Presentation Materials, in accordance with Provisions C.2.8, C.5.6, and Data Item A006, Exhibit A.</p> <p>(End of narrative B001)</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination      ACCEPTANCE: Destination</p>			<p>\$ ** NSP **</p>	<p>\$ ** NSP **</p>

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B.1 ESTIMATED COST AND PAYMENT

- B.1.1 The estimated cost for payment for performance of the work required under this contract is \$688,182.68 which shall constitute the estimated cost for purpose of the contract clause in Section I entitled "Limitation of Funds" (FAR 52.232-22).
- B.1.2 The contractor will be paid the fixed fee of \$41,290.96 stated in CLIN 0001 for the performance of work under this contract and in accordance with the terms of the contract clause in Section I entitled "Fixed Fee" (FAR 52.216-8). The fixed fee together with the reimbursement of cost shall constitute full and complete consideration for the contractor's services in connection with the work required and performed under this contract.
- B.1.3 Allowable cost shall be determined and payment thereof shall be provided, in accordance with the contract clause in Section I entitled "Allowable Cost and Payment" (FAR 52.216-7).

B.2 PAYMENT

The contractor may submit monthly vouchers monthly for payment under this contract. The fee will be payable at time of reimbursement of cost at the same rate as the total fee of this contract to the total estimated cost thereof, subject to any withholding pursuant to provisions of this contract.

B.3 FUNDING

- B.3.1 The government will provide funds under this contract covering the estimated cost and fee hereof on an incremental basis as provided for in the following fund schedule and pursuant to the contract clause entitled "limitation of Funds" (FAR 52.232-22). It is estimated that the incremental amounts are sufficient for the performance of work in each of the cited periods. The government may, at its discretion, allot such funds on an incremental basis within each fiscal year. The contractor shall so plan and execute the work required by this contract as to expend and/or commit funds compatible with the schedule set forth below. Whenever the contractor has reason to believe that the funds allotted to this contract for any fiscal year are either insufficient or excessive for the performance of work required in that fiscal year the government shall be so notified.
- B.3.2 The funding schedule is as follows:

Performance Period	Amount
FY 04 - Award to Oct 04	\$364,737.00
FY 05 - through completion	\$364,736.64

B.4 FUNDS ALLOTTED

An amount of \$364,737.00 is being obligated at time of award of the basic contract. The remaining balance of the total contract amount of \$729,473.64, an amount of \$364,736.64 which represents the funding for the second year of contract performance, is scheduled to be added to the contract, as outlined in Clause B.3.2.

\*\*\* END OF NARRATIVE B 001 \*\*\*

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SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT  
SECTION C - SCOPE OF WORK

The contractor, acting as an independent contractor and not as an agent of the Government, shall provide the necessary personnel, facilities, materials, and services to perform the specific tasks listed in the Scope of Work below.

C.1 Purpose/Objective

C.1.1 The purpose of this contract is to develop a rapid prototyping tool for optimal design of thermal management systems for vehicles. To achieve this goal a means of rapidly and comprehensively analyzing candidate design configurations is needed. The tool shall facilitate modeling design permutations, both at a system and sub-system level. By system level it is meant the choice and location of thermal management elements as part of a vehicle model (for example, use of a cooling loop or heat pipe to move heat, or air or water cooled heat sink). The sub-system level refers to design aspects of an element, such as size, or the number or diameter of tubes in a radiator, or the flow rate in a cooling loop.

C.1.2 The scope includes the development of a kit of thermal management component thermal models within MuSES, combined with an optimizing routine that finds a design configuration that minimizes a user-supplied cost function. The resulting tool shall be tied to a product management tool to facilitate configuration management. The kit shall include component models based on a MuSES modeling paradigm; components with complex thermal behavior coupled to other physical phenomena, described by user-defined routines; and component-specific convection models based on CFD analysis. Having the toolkit of thermal management components allows a designer to compare the performance of various approaches to thermal management of a vehicle without being held back by lack of modeling capability or time for a particular approach. The optimizing routine automates and accelerates the search for the "optimum" design solution. The product data management tool allows the thermal management design to be integrated into the total vehicle design process.

C.2 Tasks

The contractor shall accomplish the objectives described in C.1 by performing the following tasks:

C.2.1 Component Models:

The contractor shall develop models of selected thermal management components identified in Contract DAAE07-03-C-L082, based on a MuSES/RadTherm modeling paradigm. MuSES shall have the ability to import into the parent model not only the geometry and mesh for the component, but all part information as well, including material properties and boundary conditions. The model user will be able to place and orient the component in the parent model scene where desired, create thermal links between the component and parent, and see the analysis results of the component included with the parent results in the postprocessor. In addition, the user will be able to unlink the component and re-locate it within the parent model as desired.

C.2.2 User Defined Parts:

The contractor shall enable the use of third party routines to describe custom components that do not fit within the MuSES modeling paradigm. The same functionality for importing, locating, linking, and post-processing the user part shall be created.

C.2.3 Fast CFD:

The contractor shall develop scalable component specific convection models for selected components identified in Table 2 of the Final Report submitted under previous Contract DAAE07-03-C-L082 (entitled Component Models With Associated Special Convection Models), incorporated hereto as Attachment 001, based on CFD models of the component/fluid flow interaction. A means of importing these convection models with the associated component shall be created within MuSES.

C.2.4 Optimization Algorithm

The contractor shall create, either as a separate application, or as a link to a commercial package, a procedure for automated design optimization. A means of allowing the user to specify an arbitrary cost function, with side conditions and constraints, shall be developed and included with this optimization procedure. The optimizer shall have the ability to manipulate a MuSES model (containing import components) query the postprocessor for analysis results, and then choose a new design configuration, and shall be able to iterate this process until a satisfactory design is found.

C.2.5 Product Management Tool

The contractor shall create the functionality within MuSES necessary to interface to a commercial product data management tool to facilitate the management of the iterative nature of the design process.

C.2.6 Bradley M2 Model

<p style="text-align: center;"><b>CONTINUATION SHEET</b></p>	<p style="text-align: center;"><b>Reference No. of Document Being Continued</b></p> <p style="text-align: center;">PIIN/SIIN DAAE07-03-C-L150      MOD/AMD</p>	<p style="text-align: center;"><b>Page 7 of 26</b></p>
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**Name of Offeror or Contractor:** THERMOANALYTICS, INC.

The contractor shall develop and deliver to the government COTR (Contracting Officer Technical Representative) by 30 Nov 04, in accordance with Data Item A004, Exhibit A, a Bradley M2 computer model with a representative internal geometry to demonstrate the robustness of the design approach. The internal compartments shall include all major electrical subsystems and their associated thermal characteristics. The government will provide to the contractor a baseline M2 Bradley computer model by 30 Aug 04, in accordance with C.4.1.

C.2.7 Future Combat Systems Model

The contractor shall develop and deliver to the government COTR by 30 May 05 a Future Combat Systems (FCS) computer model to demonstrate the robustness of the final design approach, in accordance with Data Item A005, Exhibit A. This FCS model shall be a full vehicle thermal representation including, but not limited to, power train, survivability technologies, and internal geometry. The government will provide to the contractor the Pro-E geometry for the FCS variant of interest by 28 Feb 05, in accordance with C.4.2. The internal compartments shall include all major electrical subsystems and their associated thermal characteristics. The survivability technologies shall include Electro-magnetic armor, Active Protection systems, Electronic Warfare technologies, and signature reduction technologies.

C.2.8 Presentation Materials

The contractor shall prepare and deliver presentation materials in accordance with Data Item A006, Exhibit A, and specification DI-ADMN-81373. These presentation materials may be publicly displayed at government locations, or at professional or industry trade shows or conferences. The initial display will be due by 30 Mar 05 and the final display will be due by 30 Nov 05, at contract completion, in accord with Data Item A006, Exhibit A.

C.3 Meeting and Report Requirements

C.3.1 Start of Work Meeting

The contractor shall hold a Start of Work Meeting held within thirty (30) days after contract award at TACOM. The contractor shall submit Meeting Minutes within ten (10) days after the Start of Work Meeting, in accordance with Data Item A003, Exhibit A, which will describe, at a minimum, where the meeting was held, who attended for both the contractor and the government, and what actions, plans and decisions were presented and made during the meeting.

C.3.2 In-Process Review Meetings

The contractor shall hold four (4) In-Process Review (IPR) Meetings during performance of the contract. These reviews will be held every 6 months as follows: the first will be held by 30 May 04, the second by 30 Nov 04, the third by 30 May 05 and the last by contract completion, 30 Nov 05. These In-Process Reviews will be held to review cost, schedule, and performance under the contract including addressing any outstanding issues or problems that are significantly affecting performance or cost under the contract. These meetings will be held at TACOM. The meetings will be jointly chaired by the contractor and TACOM and the agenda for each IPR meeting will be coordinated in advance by the contractor and the government COTR. The contractor shall submit Meeting Minutes to the government within ten (10) days after each IPR Meeting, in accordance with Data Item A003, Exhibit A. These Meeting Minutes shall describe, at a minimum, where the IPR Meeting was held, who attended for both the contractor and the government, and description of what items/issues were discussed and any plans, actions, and decisions that were discussed or made at the meeting.

C.3.3 Progress & Status Reports

The contractor shall submit Progress & Status Reports every 90 days, beginning 90 days after award of the contract, in accordance with Data Item A001, Exhibit A. These Progress & Status reports shall include a summary of the progress made to date on the contract, including any outstanding issues, problems, and accomplishments. These reports will also list the total cost expenditures incurred to date, including the specific costs incurred since the last Progress & Status Report was submitted, and the remaining funds available under the contract. The contractor shall compare actual progress and expense to the proposed spending plan set forth in the contractor's original proposal. No Progress & Status Report will be due, however, at the completion of the contract when the Scientific & Technical Report is due, in accordance with C.3.4.

C.3.4 Scientific & Technical Report

The contractor shall submit a draft Scientific and Technical Report by 30 Sep 05, in accordance with Data Item A002, Exhibit A. The government will have 30 days to review this draft report and provide comments on it back to the contractor. The contractor shall submit the final Scientific & Technical Report by 30 Nov 05 which addresses comments made by the government on the draft report, in accordance with Data item A002, Exhibit A. The Scientific & Technical Report will include a detailed description of the overall findings and performance on the contract including a description of the results of the work performed on the specific tasks set forth in C.2. This report will also include a summary of the overall cost expenditures spent on this contract. The contractor will deliver to the government COTR at the address listed in the Section G "Communications" clause, as part of the Scientific & Technical Report, a copy of the final Rapid Prototyping Software on CD-ROM.

C.4 Government Furnished Material

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C.4.1 The government will provide a baseline M2 Bradley model to the contractor by 30 Aug 04, in accordance with C.2.6.

C.4.2 The government will provide the Pro-E geometry for the FCS variant of interest to the contractor by 28 Feb 05, in accordance with C.2.7.

C.5 Deliverables

The contractor shall provide the following deliverables under this contract to the government:

C.5.1 Progress and Status Reports

The contractor shall submit Progress & Status Reports every 90 days, beginning 90 days after contract award, in accordance with C.3.3 and Data Item A001, Exhibit A.

C.5.2 Scientific & Technical Report

The contractor shall submit a draft Scientific & Technical Report by 30 Sep 05, in accordance with C.3.4 and Data Item A002, Exhibit A. The contractor shall submit a final Scientific & Technical Report by 30 Nov 05, in accordance with C.3.4 and Data Item A002, Exhibit A.

C.5.3 Meeting Minutes

The contractor shall submit Meeting Minutes for the Start of Work Meeting and the In-process Review Meetings, in accordance with Provisions C.3.1, C.3.2, and Data Item A003, Exhibit A.

C.5.4 Bradley M2 Model

The contractor shall deliver a Bradley M2 Model, in accordance with Provision C.2.6 and Data Item A004, Exhibit A, by 30 Nov 04.

C.5.5 Future Combat Systems Model

The contractor shall deliver a Future Combat Systems (FCS) Model, in accordance with Provision C.2.7 and Data Item A005, Exhibit A, by 30 May 05.

C.5.6 Presentation Materials

The contractor shall deliver Presentation Materials in accordance with Provision C.2.8 and Data Item A006, Exhibit A.

C.5.7 Rapid Prototype Software

The contractor shall deliver a copy of the Rapid Prototype Tool on a CD-Rom at contract completion, as part of the Scientific & Technical Report required under C.3.4.



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SECTION D - PACKAGING AND MARKING  
D-1 PACKAGING AND PACKING

Software deliverables that are due under this contract and which will be delivered other than electronically (such as those delivered as a CD-ROM) shall be packaged and packed in accordance with standard commercial practice in order to ensure safe arrival at the destination listed for the Technical Representative (COTR) in the Section G clause entitled "Communications", without loss or damage.

D-2 MARKING

Any software deliverables that may be due under this contract shall be marked with a decriptive title, and with the name and address of the prime contractor as well as with the contract number.

\*\*\* END OF NARRATIVE D 001 \*\*\*

Name of Offeror or Contractor: THERMOANALYTICS, INC.

SECTION E - INSPECTION AND ACCEPTANCE

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
E-1	52.246-9	INSPECTION OF RESEARCH AND DEVELOPMENT (SHORT FORM)	APR/1984
E-2	52.246-4030 (TACOM)	INSPECTION POINT: DESTINATION	AUG/1994

We'll make our Procurement Quality Assurance inspection at the destination(s) listed in the Schedule. We'll be checking the supplies to make sure they conform with applicable drawings and specifications.

[End of Clause]

E-3	52.246-4031 (TACOM)	ACCEPTANCE POINT: DESTINATION	AUG/1994
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The Government will accept the supplies at the destination(s) listed in the Schedule.

[End of Clause]

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SECTION F - DELIVERIES OR PERFORMANCE

	Regulatory Cite	Title	Date
F-1	52.242-15	STOP-WORK ORDER	AUG/1989
F-2	52.242-17	GOVERNMENT DELAY OF WORK	APR/1984
F-3	52.247-34	F.O.B. DESTINATION	NOV/1991
F-4	52.227-4002 (TACOM)	DATA (SOFTWARE)	APR/1985

All data deliverable under this contract shall be delivered in accordance with the quantities and schedules as specified on the Contract Data Requirements List (CDRL) DD Form 1423, and shall be delivered F.O.B. Destination to the following address:

Commander  
US Army Tank-automotive and Armaments Command  
ATTN: (See DD Form 1423, Block 14)  
Warren, MI 48397-5000

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F-5 DATA

All data deliverables due under this contract shall be delivered electronically to the addressees and email addresses specified on the Contract Data Requirements List (CDRL) DD Form 1423, Exhibit A.

F-6 PERIOD OF PERFORMANCE

All work performed on this contract shall be completed by November 30, 2005.

F-7 DELIVERABLES

The contractor shall provide the following deliverables, in accordance with Provision C.5 of the contract:

- F.7.1 The contractor shall submit Progress & Status Reports every 90 days, beginning 90 days after the award of the contract, in accordance with Provision C.5.1 and Data Item A001, Exhibit A, of the contract.
- F.7.2 The contractor shall prepare and submit a draft Scientific & Technical Report by September 30, 2005, in accordance with Provision C.5.2 and Data Item A002, Exhibit A, of the contract. The government will have 30 days to review this draft Final Report and provide comments back to the contractor. The contractor shall submit the final Scientific & Technical Report to the government by November 30, 2005, in accordance with Provision C.5.2 and Data Item A002, Exhibit A, of the contract.
- F.7.3 The contractor shall submit Meeting Minutes, in accordance with Provision C.5.3 and Data Item A003, Exhibit A, of the contract.
- F.7.4 The contractor shall provide a Bradley M2 Model by November 30, 2004, in accordance with Provision C.5.3 and Data Item A004, Exhibit A, of the contract.
- F.7.5 The contractor shall provide a Future Combat Systems (FCS) Model by May 30, 2005, in accordance with Provision C.5.5 and Data Item A005, Exhibit A.
- F.7.6 The contractor shall provide Presentation Materials with the first initial display due by 30 Mar 05 and the final display due by 30 Nov 05, in accordance with Provision C.5.6 and Data Item A006, Exhibit A.
- F.7.7 The contractor shall deliver a copy of the final Rapid Prototype Tool developed under this contract, at contract completion when the final Scientific & Technical Report is submitted.

\*\*\* END OF NARRATIVE F 001 \*\*\*

**Name of Offeror or Contractor:** THERMOANALYTICS, INC.

SECTION G - CONTRACT ADMINISTRATION DATA

PRON/		OBLG		JOB		ACCOUNTING		OBLIGATED
LINE	AMS CD/			ORDER		STATION		AMOUNT
ITEM	MIPR	ACRN	STAT	ACCOUNTING CLASSIFICATION	NUMBER			
000101	E142C017EH	AA	1	21	42040000046N6N7EP665502255Y	S20113	42C017	W56HZV \$ 364,737.00
	665502M4055							
							TOTAL	\$ 364,737.00

SERVICE	TOTAL BY ACRN		ACCOUNTING CLASSIFICATION		ACCOUNTING	OBLIGATED
NAME					STATION	AMOUNT
Army	AA	21	42040000046N6N7EP665502255Y	S20113	W56HZV	\$ 364,737.00
						TOTAL \$ 364,737.00

	Regulatory Cite	Title	Date
G-1	52.242-4016 (TACOM)	COMMUNICATIONS	MAY/2000

(a) Communications on technical matters pertaining to the contract shall be direct between the contractor and the Technical Representative. Communications for the Technical Representative shall be addressed to:

Name: Commander  
 U.S.Army Tank-automotive and Armaments Command  
 ATTN: Mr. Paul Rogers, AMSTA-TR-N  
 Warren, MI 48397-5000

e-mail: rogersp@tacom.army.mil

(b) The Administrative Contracting Officer's (ACO) name and email address are also provided if known at this time:

ACO: DCMC Grand Rapids  
 ATTN: Ms. Marla Armstrong  
 Riverview Center Building  
 678 Front Street, NW  
 Grand Rapids, MI 49504-5352

e-mail: marmstrong@dcmdc.dema.mil

(c) Please see the appointment letters prepared at time of contract award for functions the Technical Representative and ACO will perform on this contract.

[End of Clause]

G-2	252.201-7000	CONTRACTING OFFICER'S REPRESENTATIVE	DEC/1991
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(a) Definition. Contracting Officer's Representative means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

[End of Clause]

G-3	52.232-4005 (TACOM)	INVOICE INFORMATION REQUIREMENT	JAN/1988
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**Name of Offeror or Contractor:** THERMOANALYTICS, INC.

On each payment request submitted, the Contractor shall identify each affected Contract Line Item Number (CLIN), sub-CLIN, and/or work directive, together with the related dollar amounts. This requirement does not diminish or restrict any other requirement of this contract.

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G-4 CONTRACTOR: SPECIAL BILLING INSTRUCTIONS

G.4.1 The contractor shall bill to the six-digit (subCLIN) and ACRN in accordance with FAR 52.232-4005, "Invoice Information Requirement".

G.4.2 If multiple subCLINs exist on the same four-digit major CLIN the contractor shall determine which six-digit subCLIN contains the oldest fiscal year money and invoice against the containing the oldest money, until fully billed.

G.4.3 To determine the fiscal year of funds, refer to the "Job Order Number" (JON) column listed in the Appropriation and Accounting Data listed elsewhere in this Section G. The first digit represents the fiscal year.

G-5 DFAS: SPECIAL PAYING INSTRUCTIONS

G.5.1 DFAS will make payments as billed.

\*\*\* END OF NARRATIVE G 001 \*\*\*

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SECTION H - SPECIAL CONTRACT REQUIREMENTS

	Regulatory Cite	Title	Date
H-1	252.205-7000	PROVISION OF INFORMATION TO COOPERATIVE AGREEMENT HOLDERS	DEC/1991
H-2	252.225-7001	BUY AMERICAN ACT AND BALANCE OF PAYMENTS PROGRAM	APR/2003
H-3	252.225-7002	QUALIFYING COUNTRY SOURCES AS SUBCONTRACTORS	APR/2003
H-4	252.225-7004	REPORTING OF CONTRACT PERFORMANCE OUTSIDE THE UNITED STATES	APR/2003
H-5	252.231-7000	SUPPLEMENTAL COST PRINCIPLES	DEC/1991
H-6	252.235-7011	FINAL SCIENTIFIC OR TECHNICAL REPORT	SEP/1999
H-7	252.242-7004	MATERIAL MANAGEMENT AND ACCOUNTING SYSTEM	DEC/2000
H-8	252.246-7000	MATERIAL INSPECTION AND RECEIVING REPORT	MAR/2003
H-9	252.246-7001	WARRANTY OF DATA	DEC/1991
H-10	52.204-4005 (TACOM)	REQUIRED USE OF ELECTRONIC CONTRACTING	DEC/2002

(a) All contract awards, modifications and delivery orders issued by TACOM will be issued electronically. The contractor has the option to receive these actions either via the Worldwide Web (WWW) or Electronic Data Interchange (EDI). Many provisions and clauses appear "by reference," meaning only clause titles and regulation site are listed; their full texts can be found at the website <http://farsite.hill.af.mil/>

(b) In order to be eligible to receive an award under this solicitation, the successful offeror must be registered with the Department of Defense (DOD) Central Contractor Registration (CCR). The CCR registration process may be done electronically at the World Wide Web (WWW) site: <http://www.ccr.gov/>. (In order to be registered to use EDI, you must use the long form for registration. Certification information, including information on the EDI 838 TPP, must be furnished to the Contracting Officer within 60 calendar days after contract award to complete networking requirements within the Government.)

(c) Worldwide Web Distribution. The contractor will receive an electronic Notice of the Award, Modification, or Delivery Order via e-mail. If you choose the WWW option, you must download the file from the appropriate TACOM webpage:

Warren: [http://contracting.tacom.army.mil/awards\\_official.htm](http://contracting.tacom.army.mil/awards_official.htm)  
Rock Island: <http://aaais.ria.army.mil/AAIS/AWDINFO/index.htm>  
Picatinny: <http://procnnet.pica.army.mil/Contracts/Index.htm>  
Red River Army Depot: <http://www.redriver.army.mil/contracting/Awards>  
Anniston Army Depot: <http://www.anadprocnnet.army.mil>

(d) Electronic Data Interchange. If you choose to receive contract awards, modifications and delivery orders through EDI, they will be delivered electronically via the Federal Acquisition Network (FACNET). Federal Standard Version 3050 of Standard X12 from the American National Standards Institute (ANSI) will be used as the format for these electronic transactions.

(1) You must complete the EDI 838 Trading Partner Profile, and must agree (i) to subcontract with a DoD certified VAN or Value Added Service (VAS) provider, or (ii) to become DoD certified as a Value Added Network (VAN). The EDI 838 Training Partner Profile is contained in the basic CCR registration form and includes portions of the registration form which are titled "Optional".

(2) You must select a VAN from the official DoD approved list. DoD Certified VANs are listed at <http://www.acq.osd.mil/ec/ecip/index.htm>. If your VAN is later removed from the official list, or if you voluntarily drop your initially selected VAN, then you must switch to a VAN that remains on the official DoD approved list. You must maintain an active account on a DoD approved VAN for the entire duration of the contract, beginning no later than the 60th day after award.

(e) Unless otherwise specified elsewhere in the contract, all data items you are required to provide under this contract must be submitted electronically. Acceptable formats include:

(1) Microsoft\* 97 Office Products (TACOM can currently read OFFICE 97\* and lower.): Word, Excel, Powerpoint, or Access

(2) 100 OR 250 MEGABYTE ZIP\*-DISK, 3 1/2 INCH DISK, OR 650 MEGABYTE CD ROM

(3) E-MAIL (Maximum size of each e-mail message is be three and one-half (3.5) megabytes).

(4) Other electronic formats. Before submitting your data in any other electronic format, please e-mail the buyer identified on the face of the contract, with e-mail copy-furnished to [amsta-idq@tacom.army.mil](mailto:amsta-idq@tacom.army.mil), to obtain a decision as to the format's acceptability. This e-mail must be received by the buyer not later than ten calendar days before the required data submission date.

NOTE: The above formats may be submitted in compressed form using self-extracting files.

(f) Additional information can be obtained by sending a message to: [acqcenweb@tacom.army.mil](mailto:acqcenweb@tacom.army.mil) or by calling (586) 574-7059.

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[End of Clause]

H-11      52.246-4026      LOCAL ADDRESSES FOR DD FORM 250      MAR/2002  
(TACOM)

(a) The contractor must provide a copy of each Material Inspection and Receiving Report (DD 250) pertaining to this contract, to the addresses given below, using either of the following methods:

(1) Our first preference is for you to use electronic mail (e-mail), using the following e-mail address:

DD250@tacom.army.mil

(2) Our second preference is for you to use data facsimile (datafax) transmission, using this fax number:

(586) 574-7552 and use "DD250 mailbox" in the "to:" block of your fax cover or header sheet.

In either method, do not mix DD250s from more than one contract in a single transmmission. That is, you may submit multiple DD250s in a single transmission, but they must all be against the same contract.

(b) These copies meet the requirements for the Purchasing Office copy and the Army Inventory Control Manager copy listed in tables 1 and 2 of DFARS Appendix F.

(c) The DD250 form may be found, in three different formats, on the World Wide Web at <http://webl.whs.osd.mil/icdhome/DD-0999.htm>

[End of Clause]

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SECTION I - CONTRACT CLAUSES

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this address: <http://farsite.hill.af.mil/>

[End of Clause]

	Regulatory Cite	Title	Date
I-1	52.202-1	DEFINITIONS	DEC/2001
I-2	52.203-3	GRATUITIES	APR/1984
I-3	52.203-5	COVENANT AGAINST CONTINGENT FEES	APR/1984
I-4	52.203-6	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT	JUL/1995
I-5	52.203-7	ANTI-KICKBACK PROCEDURES	JUL/1995
I-6	52.203-8	CANCELLATION, RESCISSION AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY	JAN/1997
I-7	52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY	JAN/1997
I-8	52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS	JUN/2003
I-9	52.204-4	PRINTING/COPYING DOUBLE-SIDED ON RECYCLED PAPER	AUG/2000
I-10	52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT	JUL/1995
I-11	52.211-15	DEFENSE PRIORITY AND ALLOCATION REQUIREMENTS	SEP/1990
I-12	52.215-2	AUDIT AND RECORDS - NEGOTIATIONS	JUN/1999
I-13	52.215-8	ORDER OF PRECEDENCE--UNIFORM CONTRACT FORMAT	OCT/1997
I-14	52.215-10	PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA	OCT/1997
I-15	52.215-12	SUBCONTRACTOR COST OR PRICING DATA	OCT/1997
I-16	52.215-15	PENSION ADJUSTMENTS AND ASSET REVERSIONS	DEC/1998
I-17	52.215-18	REVERSION OR ADJUSTMENT OF PLANS FOR POSTRETIREMENT BENEFITS (PRB) OTHER THAN PENSIONS	OCT/1997
I-18	52.215-19	NOTIFICATION OF OWNERSHIP CHANGES	OCT/1997
I-19	52.216-7	ALLOWABLE COST AND PAYMENT	DEC/2002
I-20	52.216-8	FIXED FEE	MAR/1997
I-21	52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS	OCT/2000
I-22	52.219-9	SMALL BUSINESS SUBCONTRACTING PLAN	JAN/2002
I-23	52.219-14	LIMITATIONS ON SUBCONTRACTING	DEC/1996
I-24	52.219-16	LIQUIDATED DAMAGES - SUBCONTRACTING PLAN	JAN/1999
I-25	52.222-1	NOTICE TO THE GOVERNMENT OF LABOR DISPUTES	FEB/1997
I-26	52.222-4	CONTRACT WORK HOURS AND SAFETY STANDARDS ACT--OVERTIME COMPENSATION	SEP/2000
I-27	52.222-20	WALSH-HEALEY PUBLIC CONTRACTS ACT	DEC/1996
I-28	52.222-21	PROHIBITION OF SEGREGATED FACILITIES	FEB/1999
I-29	52.222-26	EQUAL OPPORTUNITY	APR/2002
I-30	52.222-35	AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA	DEC/2001
I-31	52.222-36	AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES	JUN/1998
I-32	52.222-37	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS	DEC/2001
I-33	52.223-6	DRUG FREE WORKPLACE	MAY/2001
I-34	52.223-14	TOXIC CHEMICAL RELEASE REPORTING	AUG/2003
I-35	52.225-13	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES	JUN/2003
I-36	52.226-1	UTILIZATION OF INDIAN ORGANIZATIONS AND INDIAN-OWNED ECONOMIC ENTERPRISES	JUN/2000
I-37	52.227-1	AUTHORIZATION AND CONSENT (ALTERNATE I dated April 1984)	JUL/1995
I-38	52.227-2	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT	AUG/1996
I-39	52.227-20	RIGHTS IN DATA - SBIR PROGRAM	MAR/1994
I-40	52.228-7	INSURANCE--LIABILITY TO THIRD PERSONS	MAR/1996
I-41	52.229-5	TAXES--CONTRACTS PERFORMED IN U.S. POSSESSIONS OR PUERTO RICO	APR/1984
I-42	52.232-8	DISCOUNTS FOR PROMPT PAYMENT	FEB/2002
I-43	52.232-9	LIMITATION ON WITHHOLDING OF PAYMENTS	APR/1984
I-44	52.232-11	EXTRAS	APR/1984
I-45	52.232-17	INTEREST	JUN/1996
I-46	52.232-23	ASSIGNMENT OF CLAIMS	JAN/1986
I-47	52.232-25	PROMPT PAYMENT	FEB/2002
I-48	52.232-33	PAYMENT BY ELECTRONIC FUNDS TRANSFER--CENTRAL CONTRACTOR REGISTRATION	OCT/2003
I-49	52.233-1	DISPUTES	JUL/2002



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I-50	52.233-3	PROTEST AFTER AWARD -- (ALTERNATE I, dated JUN 1985)	AUG/1996
I-51	52.242-1	NOTICE OF INTENT TO DISALLOW COSTS	APR/1984
I-52	52.242-3	PENALTIES FOR UNALLOWABLE COSTS	MAY/2001
I-53	52.242-4	CERTIFICATION OF INDIRECT COSTS	JAN/1997
I-54	52.242-13	BANKRUPTCY	JUL/1995
I-55	52.243-2	CHANGES--COST-REIMBURSEMENT	AUG/1987
I-56	52.244-2	SUBCONTRACTS (ALT I--AUG 1998)	AUG/1998
I-57	52.244-5	COMPETITION IN SUBCONTRACTING	DEC/1996
I-58	52.245-5	GOVERNMENT PROPERTY (COST-REIMBURSEMENT, TIME-AND-MATERIAL, OR LABOR-HOUR CONTRACTS) (Deviation, per DAR Tracking Number 99-00008, 13 July 99)	JUN/2003
I-59	52.246-25	LIMITATION OF LIABILITY--SERVICES	FEB/1997
I-60	52.249-6	TERMINATION (COST-REIMBURSEMENT)	SEP/1996
I-61	52.249-13	FAILURE TO PERFORM	APR/1984
I-62	52.249-14	EXCUSABLE DELAYS	APR/1984
I-63	52.253-1	COMPUTER GENERATED FORMS	JAN/1991
I-64	252.203-7001	PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER DEFENSE CONTRACT-RELATED FELONIES	MAR/1999
I-65	252.204-7003	CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT	APR/1992
I-66	252.209-7000	ACQUISITION FROM SUBCONTRACTORS SUBJECT TO ON-SITE INSPECTION UNDER THE INTERMEDIATE-RANGE NUCLEAR FORCES (INF) TREATY	NOV/1995
I-67	252.209-7004	SUBCONTRACTING WITH FIRMS THAT ARE OWNED OR CONTROLLED BY THE GOVERNMENT OF A TERRORIST COUNTRY per DoD interim rule, Federal Register 27 Mar 98	MAR/1998
I-68	252.211-7005	SUBSTITUTIONS FOR MILITARY OR FEDERAL SPECIFICATIONS AND STANDARDS	FEB/2003
I-69	252.215-7000	PRICING ADJUSTMENTS	DEC/1991
I-70	252.215-7002	COST ESTIMATING SYSTEM REQUIREMENTS	OCT/1998
I-71	252.219-7003	SMALL, SMALL DISADVANTAGED AND WOMEN-OWNED SMALL BUSINESS SUBCONTRACTING PLAN (DOD CONTRACTS)	APR/1996
I-72	252.225-7004	REPORTING OF CONTRACT PERFORMANCE OUTSIDE THE UNITED STATES	APR/2003
I-73	252.225-7012	PREFERENCE FOR CERTAIN DOMESTIC COMMODITIES	FEB/2003
I-74	252.225-7014	PREFERENCE FOR DOMESTIC SPECIALTY METALS (ALT 1)	APR/2003
I-75	252.225-7016	RESTRICTION ON ACQUISITION OF BALL AND ROLLER BEARINGS	APR/2003
I-76	252.225-7017	PROHIBITION ON AWARD TO COMPANIES OWNED BY THE PEOPLE'S REPUBLIC OF CHINA	FEB/2000
I-77	252.225-7025	RESTRICTION ON ACQUISITION OF FORGINGS	APR/2003
I-78	252.225-7031	SECONDARY ARAB BOYCOTT OF ISRAEL	APR/2003
I-79	252.227-7016	RIGHTS IN BID OR PROPOSAL INFORMATION	JUN/1995
I-80	252.227-7017	IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS	JUN/1995
I-81	252.227-7018	RIGHTS IN NONCOMMERCIAL TECHNICAL DATA AND COMPUTER SOFTWARE-- SMALL BUSINESS INNOVATIVE RESEARCH (SBIR) PROGRAM	JUN/1995
I-82	252.227-7019	VALIDATION OF ASSERTED RESTRICTIONS--COMPUTER SOFTWARE	JUN/1995
I-83	252.227-7030	TECHNICAL DATA--WITHHOLDING OF PAYMENT	MAR/2000
I-84	252.227-7034	PATENTS--SUBCONTRACTS	APR/1984
I-85	252.232-7006	REDUCTION OR SUSPENSION OF CONTRACT PAYMENTS UPON FINDING OF FRAUD	AUG/1992
I-86	252.242-7000	POSTAWARD CONFERENCE	DEC/1991
I-87	252.243-7001	PRICING OF CONTRACT MODIFICATIONS	DEC/1991
I-88	252.244-7000	SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (DoD CONTRACTS)	MAR/2000
I-89	52.215-21	REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA--MODIFICATIONS ````(ALTERNATE III (OCT 1997))	OCT/1997

(a) Exceptions from cost or pricing data.

(1) In lieu of submitting cost or pricing data for modifications under this contract, for price adjustments expected to exceed the threshold set forth at FAR 15.403-4 on the date of the agreement on price or the date of the award, whichever is later, the Contractor may submit a written request for exception by submitting the information described in the following subparagraphs. The Contracting Officer may require additional supporting information, but only to the extent necessary to determine whether an exception should be granted, and whether the price is fair and reasonable--

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(i) Identification of the law or regulation establishing the price offered. If the price is controlled under law by periodic rulings, reviews, or similar actions of a governmental body, attach a copy of the controlling document, unless it was previously submitted to the contracting office.

(ii) Information on modifications of contracts of subcontracts for commercial items.

(A) If--

- (1) the original contract or subcontract was granted an exception from cost or pricing data requirements because the price agreed upon was based on adequate price competition, or prices set by law or regulation, or was a contract or subcontract for the acquisition of a commercial item, and
- (2) the modification (to the contract or subcontract) is not exempted based on one of these exceptions, then the Contractor may provide information to establish that the modification would not change the contract or subcontract from a contract or subcontract for the acquisition of a commercial item to a contract or subcontract for the acquisition of an item other than a commercial item.

(B) For a commercial item exception, the Contractor shall provide, at a minimum, information on prices at which the same item or similar items have previously been sold that is adequate for evaluating the reasonableness of the price of the modification. Such information may include--

- (1) For catalog items, a copy of or identification of the catalog and its date, or the appropriate pages for the offered items, or a statement that the catalog is on file in the buying office to which the proposal is being submitted. Provide a copy or describe current discount policies and price lists (published or unpublished), e.g., wholesale, original equipment manufacturer, or reseller. Also explain the basis of each offered price and its relationship to the established catalog price, including how the proposed price relates to the price or recent sales in quantities similar to the proposed quantities.
- (2) For market-priced items, the source and date or period of the market quotation or other basis for market price, the base amount, and applicable discounts. In addition, describe the nature of the market.
- (3) For items included on an active Federal Supply Service Multiple Award Schedule contract, proof that an exception has been granted for the schedule item.
- (4) The Contractor grants the Contracting Officer or an authorized representative the right to examine, at any time before award, books, records, documents, or other directly pertinent records to verify any request for an exception under this clause, and the reasonableness of price. For items priced using catalog or market prices, or law or regulation, access does not extend to cost or profit information or other data relevant solely to the Contractor's determination of the prices to be offered in the catalog or marketplace.

(b) Requirements for cost or pricing data. If the Contractor is not granted an exception from the requirement to submit cost or pricing data, the following applies:

(1) The Contractor shall submit cost or pricing data and supporting attachments in accordance with Table 15-2 of FAR 15.408.

(2) As soon as practicable after agreement on price, but before contract award (except for unpriced actions), the Contractor shall submit a Certificate of Current Cost or Pricing Data, as prescribed by FAR 15.406-2.

(c) Submit the cost portion of the proposal via the following electronic media: electronic spreadsheet files compatible with MS-DOS/Windows versions Excel 5.0 or earlier with \*.xls, .wbl, or .wk3 the preferred formats.

[End of Clause]

I-90

52.222-2

PAYMENT FOR OVERTIME PREMIUMS

JUL/1990

(a) The use of overtime is authorized under this contract if the overtime premium cost does not exceed zero or the overtime premium is paid for work--

- (1) Necessary to cope with emergencies such as those resulting from accidents, natural disasters, breakdown of production equipment, or occasional production bottlenecks of a sporadic nature;
- (2) By indirect-labor employees such as those performing duties in connection with administration, protection,

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transportation, maintenance, standby plant protection, operation of utilities, or accounting;

(3) To perform tests, industrial processes, laboratory procedures, loading or unloading of transportation conveyances, and operations in flight or afloat that are continuous in nature and cannot reasonably be interrupted or completed otherwise; or

(4) That will result in lower overall costs to the Government.

(b) Any request for estimated overtime premiums that exceeds the amount specified above shall include all estimated overtime for contract completion and shall--

(1) Identify the work unit; e.g., department or section in which the requested overtime will be used, together with present workload, staffing, and other data of the affected unit sufficient to permit the Contracting Officer to evaluate the necessity for the overtime;

(2) Demonstrate the effect that denial of the request will have on the contract delivery or performance schedule;

(3) Identify the extent to which approval of overtime would affect the performance or payments in connection with other Government contracts, together with identification of each affected contract; and

(4) Provide reasons why the required work cannot be performed by using multishift operations or by employing additional personnel.

(End of clause)

I-91      52.219-4      NOTICE OF PRICE EVALUATION FOR HUBZONE SMALL BUSINESS CONCERNS      JAN/1999

(a) Definition. HUBZone small business concern, as used in this clause, means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

(b) Evaluation preference.

(1) Offers will be evaluated by adding a factor of 10 percent to the price of all offers, except-

(i) Offers from HUBZone small business concerns that have not waived the evaluation preference;

(ii) Otherwise successful offers from small business concerns;

(iii) Otherwise successful offers of eligible products under the Trade Agreements Act when the dollar threshold for application of the Act is exceeded (see 25.402 of the Federal Acquisition Regulation (FAR)); and

(iv) Otherwise successful offers where application of the factor would be inconsistent with a Memorandum of Understanding or other international agreement with a foreign government.

(2) The factor of 10 percent shall be applied on a line item basis or to any group of items on which award may be made. Other evaluation factors described in the solicitation shall be applied before application of the factor.

(3) A concern that is both a HUBZone small business concern and a small disadvantaged business concern will receive the benefit of both the HUBZone small business price evaluation preference and the small disadvantaged business price evaluation adjustment (see FAR clause 52.219-23). Each applicable price evaluation preference or adjustment shall be calculated independently against an offeror's base offer. These individual preference amounts shall be added together to arrive at the total evaluated price for that offer.

(c) Waiver of evaluation preference. A HUBZone small business concern may elect to waive the evaluation preference, in which case the factor will be added to its offer for evaluation purposes. The agreements in paragraph (d) of this clause do not apply if the offeror has waived the evaluation preference.

[ ] Offer elects to waive the evaluation preference.

(d) Agreement. A HUBZone small business concern agrees that in the performance of the contract, in the case of a contract for

(1) Services (except construction), at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern or employees of other HUBZone small business concerns;

(2) Supplies (other than procurement from a nonmanufacturer of such supplies), at least 50 percent of the cost of manufacturing, excluding the cost of materials, will be performed by the concern or other HUBZone small business concerns;

(3) General construction, at least 15 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns; or

(4) Construction by special trade contractors, at least 25 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns.

<b>CONTINUATION SHEET</b>	<b>Reference No. of Document Being Continued</b>  <b>PIIN/SIIN</b> DAAE07-03-C-L150 <b>MOD/AMD</b>	<b>Page 20 of 26</b>
<b>Name of Offeror or Contractor:</b> THERMOANALYTICS, INC.		

(e) A HUBZone joint venture agrees that in the performance of the contract, the applicable percentage specified in paragraph (d) of this clause will be performed by the HUBZone small business participant or participants;

(f) A HUBZone small business concern nonmanufacturer agrees to furnish in performing this contract only end items manufactured or produced by HUBZone small business manufacturer concerns. This paragraph does not apply in connection with construction or service contracts.

[End of Clause]

I-92                      52.223-11                      OZONE-DEPLETING SUBSTANCES                      MAY/2001

(a) Definition. Ozone-depleting substance, as used in this clause, means any substance the Environmental Protection Agency designates in 40 CFR part 82 as--

(1) Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or

(2) Class II, including but not limited to, hydrochlorofluorocarbons.

(b) The Contractor shall label products which contain or are manufactured with ozone-depleting substances in the manner and to the extent required by 42 U.S.C. 7671j(b), (c), and (d) and 40 CFR Part 82, Subpart E, as follows:

WARNING: Contains (or manufactured with, if applicable) \_\_\_\_\_ \* \_\_\_\_\_, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere.

\*The Contractor shall insert the name of the substance(s).

[End of Clause]

I-93                      52.232-22                      LIMITATION OF FUNDS                      APR/1984

(a) The parties estimate that performance of this contract will not cost the Government more than (1) the estimated cost specified in the Schedule or, (2) if this is a cost-sharing contract, the Government's share of the estimated cost specified in the Schedule. The Contractor agrees to use its best efforts to perform the work specified in the Schedule and all obligations under this contract within the estimated cost, which, if this is a cost-sharing contract, includes both the Government's and the Contractor's share of the cost.

(b) The Schedule specifies the amount presently available for payment by the Government and allotted to this contract, the items covered, the Government's share of the cost if this is a cost-sharing contract, and the period of performance it is estimated the allotted amount will cover. The parties contemplate that the Government will allot additional funds incrementally to the contract up to the full estimated cost to the Government specified in the Schedule, exclusive of any fee. The Contractor agrees to perform, or have performed, work on the contract up to the point at which the total amount paid and payable by the Government under the contract approximates but does not exceed the total amount actually allotted by the Government to the contract.

(c) The Contractor shall notify the Contracting Officer in writing whenever it has reason to believe that the costs it expects to incur under this contract in the next 60 days, when added to all costs previously incurred, will exceed 75 percent of (1) the total amount so far allotted to the contract by the Government or, (2) if this is a cost-sharing contract, the amount then allotted to the contract by the Government plus the Contractor's corresponding share. The notice shall state the estimated amount of additional funds required to continue performance for the period specified in the Schedule.

(d) Sixty days before the end of the period specified in the Schedule, the Contractor shall notify the Contracting Officer in writing of the estimated amount of additional funds, if any, required to continue timely performance under the contract or for any further period specified in the Schedule or otherwise agreed upon, and when the funds will be required.

(e) If, after notification, additional funds are not allotted by the end of the period specified in the Schedule or another agreed-upon date, upon the Contractor's written request the Contracting Officer will terminate this contract on that date in accordance with the provisions of the TERMINATION clause of this contract. If the Contractor estimates that the funds available will allow it to continue to discharge its obligations beyond that date, it may specify a later date in its request, and the Contracting Officer may terminate this contract on that later date.

(f) Except as required by other provisions of this contract, specifically citing and stated to be an exception to this clause--

(1) The Government is not obligated to reimburse the Contractor for costs incurred in excess of the total amount allotted by the Government to this contract; and

<p style="text-align: center;"><b>CONTINUATION SHEET</b></p>	<p style="text-align: center;"><b>Reference No. of Document Being Continued</b></p> <p style="text-align: center;">PIIN/SIIN DAAE07-03-C-L150      MOD/AMD</p>	<p style="text-align: center;"><b>Page 21 of 26</b></p>
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**Name of Offeror or Contractor:** THERMOANALYTICS, INC.

(2) The Contractor is not obligated to continue performance under this contract (including actions under the TERMINATION clause of this contract) or otherwise incur costs in excess of (i) the amount then allotted to the contract by the Government or, (ii) if this is a cost-sharing contract, the amount then allotted by the Government to the contract plus the Contractor's corresponding share, until the Contracting Officer notifies the Contractor in writing that the amount allotted by the Government has been increased and specifies an increased amount, which shall then constitute the total amount allotted by the Government to the contract.

(g) The estimated cost shall be increased to the extent that (1) the amount allotted by the Government or, (2) if this is a cost-sharing contract, the amount then allotted by the Government to the contract plus the Contractor's corresponding share, exceeds the estimated cost specified in the Schedule. If this is a cost-sharing contract, the increase shall be allocated in accordance with the formula specified in the Schedule.

(h) No notice, communication, or representation in any form, other than that specified in subparagraph (f)(2) above, or from any person other than the Contracting Officer, shall affect the amount allotted by the Government to this contract. In the absence of the specified notice, the Government is not obligated to reimburse the Contractor for any costs in excess of the total amount allotted by the Government to this contract, whether incurred during the course of the contract or as a result of termination.

(i) When and to the extent that the amount allotted by the Government to the contract is increased, any costs the Contractor incurs before the increase that are in excess of (1) the amount previously allotted by the Government or, (2) if this is a cost-sharing contract, the amount previously allotted by the Government to the contract plus the Contractor's corresponding share, shall be allowable to the same extent as if incurred afterward, unless the Contracting Officer issues a termination or other notice and directs that the increase is solely to cover termination or other specified expenses.

(j) Change orders shall not be considered an authorization to exceed the amount allotted by the Government specified in the Schedule, unless they contain a statement increasing the amount allotted.

(k) Nothing in this clause shall affect the right of the Government to terminate this contract. If this contract is terminated, the Government and the Contractor shall negotiate an equitable distribution of all property produced or purchased under the contract, based upon the share of costs incurred by each.

(l) If the Government does not allot sufficient funds to allow completion of the work, the Contractor is entitled to a percentage of the fee specified in the Schedule equalling the percentage of completion of the work contemplated by this contract.  
(End of clause)

I-94      52.252-6      AUTHORIZED DEVIATIONS IN CLAUSES      APR/1984

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the date of the clause.

(b) The use in this solicitation or contract of any DoD FAR Supplement (DFARS) (48 CFR 2) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the name of the regulation.

[End of Clause]

I-95      252.204-7004      REQUIRED CENTRAL CONTRACTOR REGISTRATION      NOV/2001

(a) Definitions. As used in this clause--

(1) Central Contractor Registration (CCR) database means the primary DoD repository for contractor information required for the conduct of business with DoD.

(2) Data Universal Numbering System (DUNS) number means the 9-digit number assigned by Dun and Bradstreet Information Services to identify unique business entities.

(3) Data Universal Numbering System +4 (DUNS+4) number means the DUNS number assigned by Dun and Bradstreet plus a 4-digit suffix that may be assigned by a parent (controlling) business concern. This 4-digit suffix may be assigned at the discretion of the parent business concern for such purposes as identifying subunits or affiliates of the parent business concern.

(4) Registered in the CCR database means that all mandatory information, including the DUNS number or the DUNS+4 number, if applicable, and the corresponding Commercial and Government Entity (CAGE) code, is in the CCR database; the DUNS number and the CAGE code have been validated; and all edits have been successfully completed.

(b)

<b>CONTINUATION SHEET</b>	<b>Reference No. of Document Being Continued</b>  <b>PIIN/SIIN</b> DAAE07-03-C-L150 <b>MOD/AMD</b>	<b>Page 22 of 26</b>
<b>Name of Offeror or Contractor:</b> THERMOANALYTICS, INC.		

(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee must be registered in the CCR database prior to award, during performance, and through final payment of any contract resulting from this solicitation, except for awards to foreign vendors for work to be performed outside the United States.

(2) The offeror shall provide its DUNS or, if applicable, its DUNS+4 number with its offer, which will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(3) Lack of registration in the CCR database will make an offeror ineligible for award.

(4) DoD has established a goal of registering an applicant in the CCR database within 48 hours after receipt of a complete and accurate application via the Internet. However, registration of an applicant submitting an application through a method other than the Internet may take up to 30 days. Therefore, offerors that are not registered should consider applying for registration immediately upon receipt of this solicitation.

(c) The Contractor is responsible for the accuracy and completeness of the data within the CCR, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to confirm on an annual basis that its information in the CCR database is accurate and complete.

(d) Offerors and contractors may obtain information on registration and annual confirmation requirements by calling 1-888-227-2423, or via the Internet at <http://www.ccr.gov>.

[End of Clause]

I-96	252.225-7015	PREFERENCE FOR DOMESTIC HAND OR MEASURING TOOLS	DEC/1991
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The Contractor agrees to deliver under this contract only hand or measuring tools produced in the United States or its possessions.  
(End of clause)

I-97	252.247-7023	TRANSPORTATION OF SUPPLIES BY SEA	MAY/2002
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(a) Definitions. As used in this clause--

(1) Components means articles, materials, and supplies incorporated directly into end products at any level of manufacture, fabrication, or assembly by the Contractor or any subcontractor.

(2) Department of Defense (DoD) means the Army, Navy, Air Force, Marine Corps, and defense agencies.

(3) Foreign flag vessel means any vessel that is not a U.S.-flag vessel.

(4) Ocean transportation means any transportation aboard a ship, vessel, boat, barge, or ferry through international waters.

(5) Subcontractor means a supplier, materialman, distributor, or vendor at any level below the prime contractor whose contractual obligation to perform results from, or is conditioned upon, award of the prime contract and who is performing any part of the work or other requirement of the prime contract. However, effective May 1, 1996, the term does not include a supplier, materialman, distributor, or vendor of commercial items or commercial components.

(6) Supplies means all property, except land and interests in land, that is clearly identifiable for eventual use by or owned by the DoD at the time of transportation by sea.

(i) An item is clearly identifiable for eventual use by the DoD if, for example, the contract documentation contains a reference to a DoD contract number or a military destination.

(ii) Supplies includes (but is not limited to) public works; buildings and facilities; ships; floating equipment and vessels of every character, type, and description, with parts, subassemblies, accessories, and equipment; machine tools; material; equipment; stores of all kinds; end items; construction materials; and components of the foregoing.

(7) U.S.-flag vessel means a vessel of the United States or belonging to the United States, including any vessel registered or having national status under the laws of the United States.

(b)

<p><b>CONTINUATION SHEET</b></p>	<p><b>Reference No. of Document Being Continued</b></p> <p><b>PIIN/SIIN</b> DAAE07-03-C-L150 <b>MOD/AMD</b></p>	<p><b>Page 23 of 26</b></p>
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**Name of Offeror or Contractor:** THERMOANALYTICS, INC.

(1) The Contractor shall use U.S.-flag vessels when transporting any supplies by sea under this contract.

(2) A subcontractor transporting supplies by sea under this contract shall use U.S.-flag vessels if-

(i) This contract is a construction contract; or

(ii) The supplies being transported are-

(A) Noncommercial items; or

(B) Commercial items that-

(1) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it subcontracts for f.o.b. destination shipment);

(2) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or

(3) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

(c) The Contractor and its subcontractors may request that the Contracting Officer authorize shipment in foreign-flag vessels, or designate available U.S.-flag vessels, if the Contractor or a subcontractor believes that--

(1) U.S.-flag vessels are not available for timely shipment;

(2) The freight charges are inordinately excessive or unreasonable; or

(3) Freight charges are higher than charges to private persons for transportation of like goods.

(d) The Contractor must submit any request for use of other than U.S.-flag vessels in writing to the Contracting Officer at least 45 days prior to the sailing date necessary to meet its delivery schedules. The Contracting Officer will process requests submitted after such date(s) as expeditiously as possible, but the Contracting Officer's failure to grant approvals to meet the shipper's sailing date will not of itself constitute a compensable delay under this or any other clause of this contract. Requests shall contain at a minimum--

(1) Type, weight, and cube of cargo;

(2) Required shipping date;

(3) Special handling and discharge requirements;

(4) Loading and discharge points;

(5) Name of shipper and consignee;

(6) Prime contract number; and

(7) A documented description of efforts made to secure U.S.-flag vessels, including points of contact (with names and telephone numbers) with at least two U.S.-flag carriers contacted. Copies of telephone notes, telegraphic and facsimile message or letters will be sufficient for this purpose.

(e) The Contractor shall, within 30 days after each shipment covered by this clause, provide the Contracting Officer and the Division of National Cargo, Office of Market Development, Maritime Administration, U.S. Department of Transportation, Washington, DC 20590, one copy of the rated on board vessel operating carrier's ocean bill of lading, which shall contain the following information--

(1) Prime contract number;

(2) Name of vessel;

(3) Vessel flag of registry;

(4) Date of loading;

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**Name of Offeror or Contractor:** THERMOANALYTICS, INC.

- (5) Port of loading;
- (6) Port of final discharge;
- (7) Description of commodity;
- (8) Gross weight in pounds and cubic feet if available;
- (9) Total ocean freight in U.S. dollars; and
- (10) Name of the steamship company.

(f) The Contractor shall provide with its final invoice under this contract a representation that to the best of its knowledge and belief--

- (1) No ocean transportation was used in the performance of this contract;
- (2) Ocean transportation was used and only U.S.-flag vessels were used for all ocean shipments under the contract;

(3) Ocean transportation was used, and the Contractor had the written consent of the Contracting Officer for all non-U.S.-flag ocean transportation; or

(4) Ocean transportation was used and some or all of the shipments were made on non-U.S.-flag vessels without the written consent of the Contracting Officer. The Contractor shall describe these shipments in the following format:

ITEM DESCRIPTION	CONTRACT LINE ITEMS	QUANTITY	TOTAL
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(g) If the final invoice does not include the required representation, the Government will reject and return it to the Contractor as an improper invoice for the purposes of the Prompt Payment clause of this contract. In the event there has been unauthorized use of non-U.S.-flag vessels in the performance of this contract, the Contracting Officer is entitled to equitably adjust the contract, based on the unauthorized use.

(h) In the award of subcontracts for the types of supplies described in paragraph (b)(2) of this clause, the Contractor shall flow down the requirements of this clause as follows:

(1) The Contractor shall insert the substance of this clause, including this paragraph (h) in all subcontracts that exceed the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation.

(2) The Contractor shall insert the substance of paragraphs (a) through (e) of this clause, and this paragraph (h), in subcontracts that are at or below the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation.

[End of Clause]

I-98      252.247-7024      NOTIFICATION OF TRANSPORTATION OF SUPPLIES BY SEA      MAR/2000

(a) The Contractor has indicated by the response to the solicitation provision, Representation of Extent of Transportation by Sea, that it did not anticipate transporting by sea any supplies. If however, after the award of this contract, the Contractor learns that supplies, as defined in the Transportation of Supplies by Sea clause of this contract, will be transported by sea, the Contractor--

- (1) Shall notify the Contracting Officer of that fact; and
- (2) Hereby agrees to comply with all the terms and conditions of the Transportation of Supplies by Sea clause of this contract.

(b) The Contractor shall include this clause, including this paragraph (b), revised as necessary to reflect the relationship of the contracting parties

- (1) In all subcontracts hereunder, if this contract is a construction contract; or
- (2) If this contract is not a construction contract, in all subcontracts under this contract that are for--
  - (i) Noncommercial items; or



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(ii) Commercial items that-

(A) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it subcontracts for f.o.b. destination shipment);

(B) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or

(C) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

[End of Clause]

I-99      52.204-4009      MANDATORY USE OF CONTRACTOR TO GOVERNMENT ELECTRONIC COMMUNICATION      JUN/1999  
(TACOM)

(a) All references in the contract to the submission of written documentation shall mean electronic submission. All electronic submissions shall be in the formats and media described in the "Electronic Quotations/Offers/Bids Required in Response to this Request for Quotations/Proposals/Bids" clause elsewhere in this document. (See Section K for commercial acquisitions, Section L for RFPs, and Section I for RFQs.)

(b) This shall include all written unclassified communications between the Government and the Contractor except contract awards and contract modifications which shall be posted on the internet. Return receipt shall be used if a commercial application is available. Classified information shall be handled in full accordance with the appropriate security requirements.

(c) In order to be contractually binding, all Government communications requiring a Contracting Officer signature must be sent from the Contracting Officer's e-mail address. The Contractor shall designate the personnel with signature authority who can contractually bind the contractor. All binding contractor communication shall be sent from this contractor e-mail address(es).

(d) Upon award, the Contractor shall provide the Contracting Officer with a list of e-mail addresses for all administrative and technical personnel assigned to this contract.

(e) Unless exempted by the Procuring Contracting Officer in writing, all unclassified written communication after contract award shall be transmitted electronically.

[End of Clause]

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Name of Offeror or Contractor: THERMOANALYTICS, INC.			

SECTION J - LIST OF ATTACHMENTS

List of Addenda	Title	Date	Number of Pages	Transmitted By
Exhibit A	CONTRACT DATA REQUIREMENTS LIST (FORM DD 1423)	22-OCT-2003	007	
Attachment 001	COMPONENT MODELS WITH CONVECTION MODELS	18-NOV-2003	001	

CONTRACT DATA ITEM REQUIREMENT LIST (DD FORM 1423)

- A. CONTRACT LINE ITEM NO.: 0002  
B. EXHIBIT: A  
C. CATEGORY: Reporting  
D. SYSTEM ITEM: Comprehensive Thermal Management Design  
E. SOLICITATION NO.: N/A  
F. CONTRACTOR: ThermoAnalytics, Inc.

- 
1. DATA ITEM: A001  
2. TITLE OF DATA ITEM: Progress & Status Reports  
3. SUBTITLE: N/A  
4. AUTHORITY: DI-MGMT-80227  
5. CONTRACT REFERENCES: C.3.3 and C.5.1  
6. REQUIRING OFFICE: AMSTA-TR  
7. DD 250 REQUIRED: No  
8. APP CODE: N/A  
9. DISTRIBUTION STATEMENT REQUIRED: N/A  
10. FREQUENCY: Every 90 days  
11. AS OF DATE: See Block 16 below  
12. DATE OF FIRST SUBMISSION: 90 days after contract award  
13. DATE OF SUBSEQUENT SUBMISSIONS: Every 90 days

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14. DISTRIBUTION:

A. ADDRESSEES:	B. COPIES:	DRAFT	FINAL
COTR: Mr. Paul Rogers, TACOM, email: rogersp@tacom.army.mil			1
Buyer: Mr. Paul Veselenak, TACOM, email: veselenp@tacom.army.mil			1
ACO: Ms. Marla Armstrong, DCMC Grand Rapids, email: marmstrong@dcmdc.dcmde.dcmde.mil			1
	15. TOTAL:		3

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16. REMARKS:

a. The contractor will provide quarterly progress & status reports. The first progress report will be due by ninety (90) days after the contract award date.

b. The contractor shall complete the reports in accordance with (IAW) Data Item Description (DID) DI-MGMT-80227 "Contractors Progress, Status, and Management Report". The reports shall include both a description of the cost expenditures incurred to date, including the expenditures incurred since the last progress report and the funds which remain available under the contract. The COTR is responsible for accepting or rejecting the "Contractor's Progress, Status, and Management Report". See DID DI-MGMT-80227, at the Internet address below, for instructions for completing the required report.

<http://astimage.daps.dia.mil/docimages/0001\48\17\DI80227.PD8>

c. The contractor shall prepare the progress reports in the contractor's format. The contractor shall submit the reports using any of the following electronic formats:

(1) Files using Microsoft 97 Office Products, Word, Excel, Powerpoint, or Access. Spreadsheets must be sent in a file format that includes all formulae, macro and format information. Print image is not acceptable. Executable files, other than self-extracting compressed files, are unacceptable.

(2) Files in Adobe PDF (Portable Document Format). Scanners should be set for 200 dots per inch.

(3) Files in HTML (Hypertext Markup Language). HTML documents must not contain active links to live Internet sites or pages. All

linked information must be contained within your electronic report, and be accessible offline.

(4) Other electronic formats. Before preparing your report in any other electronic format please email the COTR with an email copy furnished to amsta-idg@tacom.army.mil, to obtain a decision as to the format's acceptability. This email must be received by the COTR not later than ten (10) calendar days before the report's due date. All alternate methods must be at no cost to the government.

(a) The above formats may be submitted in compressed form using self-extracted files.

(b) Files may be read-only, password protected.

d. Acceptable media: The contractor shall submit the progress reports via email. If email is not workable, other acceptable media is 100 or 250 Megabyte Zip-disk, 3 1/2 inch disk, or 650 megabyte CD ROM. Identify the software application and version used to create each file submitted.

(1) E-Mail: Maximum size of each e-mail message shall be three and one-half (3.5) megabytes. Any compressed files must be self-extracting and you must provide appropriate instructions. You may use multiple e-mail messages if necessary, however, you must annotate the subject lines in this manner: "Message 1 of 3, 2 of 3, 3 of 3"

(2) 100 or 250 Megabyte ZIP-DISK, 3 1/2 inch disk, or 650 megabyte CD ROM via U.S. Mail or other carrier. The contractor shall label all submitted disks with the contract number, the contractor's name, address, and the contractor's phone number.

NOTE: Please select only one medium by which to transmit each report. For instance, do not submit a report via e-mail and 100 megabyte Zip-disk.

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17. PRICE GROUP: N/A  
18. ESTIMATED TOTAL PRICE: N/A

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1. DATA ITEM: A002  
2. TITLE OF DATA ITEM: Scientific & Technical Report  
3. SUBTITLE: N/A  
4. AUTHORITY: N/A  
5. CONTRACT REFERENCE: C.3.4 and C.5.2  
6. REQUIRING OFFICE: AMSTA-TR  
7. DD 250 REQUIRED: No  
8. APP CODE: N/A  
9. DISTRIBUTION STATEMENT REQUIRED: No  
10. FREQUENCY: None  
11. AS OF DATE: See Block 16 below  
12. DATE OF FIRST SUBMISSION: See Block 16 below  
13. DATE OF SUBSEQUENT SUBMISSION: See Block 16 below

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14. DISTRIBUTION:

A. ADDRESSEES:	B. COPIES:	DRAFT	FINAL
COTR: Mr. Paul Rogers, TACOM, email: rogersp@tacom.army.mil		1	1
Buyer: Mr. Paul Veselenak, TACOM, email: veselenp@tacom.army.mil		1	1
ACO: Ms. Marla Armstrong, DCMC Grand Rapids, email: marmstrong@dcmdc.dcm.mil			
	15. TOTAL:	2	2

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16. REMARKS:

a. The contractor shall deliver one (1) draft "Scientific and Technical Report" by 30 Sep 05. The draft report shall include a completed Standard Form (SF) 298 (Report Documentation Page) as the report's cover sheet. The COTR shall review the draft report and return it within thirty (30) days of receipt with comments. The contractor shall submit one (1) final "Scientific and Technical Report" (with the completed SF 298) by 30 Nov 05. The contractor shall deliver to the government COTR in the form of a CD-ROM at the address listed for the COTR in the Section G "Communications" clause, a copy of the Rapid Prototyping Tool developed under this contract, in accordance with C.5.7.

b. The contractor shall complete the reports in accord with (IAW) DID-DI-MISC 80711A, "Scientific and Technical Reports". The COTR is responsible for accepting or rejecting the draft and final reports and for submitting the final approved report to the Defense Technical Information Center (DTIC), in Ft. Belvoir, VA. See the data item description (DID) DI-MISC-80711A, at the Internet address listed below, for instructions on completing the required report.

<http://astimage.daps.dla.mil/docimages/0002\27\88\80711A.PD4>

You may download the SF 298 Form from the the following Internet address:

[http://www.dtic.mil/dtic/forms/SF298\\_MS67.doc](http://www.dtic.mil/dtic/forms/SF298_MS67.doc)

Here are some additional instructions for completing the SF 298 form that apply when submitting reports under the Small Business Innovation Research (SBIR) program:

For each unclassified report the contractor shall fill in Block 12a (Distribution/Availability Statement) of the SF 298 with one of the following statements:

(a) Approved for public release, distribution unlimited.

(b) Distribution authorized to U.S> Government Agencies only; contains proprietary information.

NOTE: After reviewing the contractor's entry in Block 12a TACOM has final responsibility for assigning a distribution statement.

Block 13 (Abstract) of the SF 298 must include the first sentence "Report developed under SBIR contract for Topic A02-234". The abstract must identify the purpose of the work and briefly describe the work carried out, the finding or results, and the potential applications of the effort. Since the Department of Defense (DOD) will be publishing the abstract it must not contain any proprietary or classified data.

Block 14 (Subject Terms) of the SF 298 must include the term "SBIR Report".

c. The contractor shall prepare the reports in the contractor's format and submit the reports using any of the following electronic formats:

(1) Files using Microsoft 97 Office Products, Word, Excel, Powerpoint, or Access. Spreadsheets must be sent in a file format that includes all formulae, macro and format information. Print image is not acceptable. Executable files, other than self-extracting compressed files, are unacceptable.

(2) Files in Adobe PDF (Portable Document Format). Scanners should be set for 200 dots per inch.

(3) Files in HTML (Hypertext Markup Language). HTML documents must not contain active links to live Internet sites or pages. All linked information must be contained within your electronic report, and be accessible offline.

(4) Other electronic formats. Before preparing your report in any other electronic format please email the COTR with an email copy furnished to [amsta-idq@tacom.army.mil](mailto:amsta-idq@tacom.army.mil), to obtain a decision as to the format's acceptability. This email must be received by the COTR not later than ten (10) calendar days before the report's due date. All alternate methods must be at no cost to the government.

(a) The above formats may be submitted in compressed form using self-extracted files.

(b) Files may be read-only, password protected.

d. Acceptable media: The contractor shall submit the progress reports via email. If email is not workable, other acceptable media is 100 or 250 Megabyte Zip-disk, 3 1/2 inch disk, or 650 megabyte CD ROM. Identify the software application and version used to create each file submitted.

(1) E-Mail: Maximum size of each e-mail message shall be three and one-half (3.5) megabytes. Any compressed files must be self-extracting and you must provide appropriate instructions. You may use multiple e-mail messages if necessary, however, you must annotate

the subject lines in this manner: "Message 1 of 3, 2 of 3, 3 of 3"

(2) 100 or 250 Megabyte ZIP-DISK, 3 1/2 inch disk, or 650 megabyte CD ROM via U.S. Mail or other carrier. The contractor shall label all submitted disks with the contract number, the contractor's name, address, and the contractor's phone number.

NOTE: Please select only one medium by which to transmit each report. For instance, do not submit a report via e-mail and 100 megabyte Zip-disk.

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17. PRICE GROUP: N/A  
18. ESTIMATED TOTAL PRICE: N/A

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1. DATA ITEM: A003  
2. TITLE OF DATA ITEM: Meeting Minutes  
3. SUBTITLE: N/A  
4. AUTHORITY: N/A  
5. CONTRACT REFERENCE: C.5.3, C.3.1, C.3.2  
6. REQUIRING OFFICE: AMSTA-TR  
7. DD 250 REQUIRED: No  
8. APP CODE: N/A  
9. DISTRIBUTION STATEMENT REQUIRED: N/A  
10. FREQUENCY: See Block 16 below  
11. AS OF DATE: See Block 16 below  
12. DATE OF FIRST SUBMISSION: See Block 16 below  
13. DATE OF SUBSEQUENT SUBMISSION: See Block 16 below

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14. DISTRIBUTION:

A. ADDRESSEES:	B. COPIES:	DRAFT	FINAL
COTR: Mr. Paul Rogers, TACOM, email: rogersp@tacom.army.mil			1
Buyer: Mr. Paul Veselenak, TACOM, email: veselenp@tacom.army.mil			1
	15. TOTAL:		2

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16. REMARKS:

The contractor shall prepare and submit to the addressees listed in Block 14 above Meeting Minutes for the meetings required under Provisions C.5.3, C.3.1 and C.3.2 of the contract. These Meeting Minutes shall include a summary of any significant issues or problems that were discussed during this meeting as well as a record of any decisions or plans made during the meeting. The time, date, and persons attending the the meeting will also be recorded and included in the minutes. The contractor shall electronically submit these Meeting Minutes to the government within ten (10) days after the meeting. The meeting minutes must be readable by Microsoft Windows 2000, Microsoft Office, MuSES, and Mathead 11 programs. Contractor format is acceptable.

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17. PRICE GROUP: N/A  
18. ESTIMATED TOTAL PRICE: N/A

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1. DATA ITEM: A004  
2. TITLE OF DATA ITEM: Bradley M2 Model  
3. SUBTITLE: Bradley M2 Model  
4. AUTHORITY: N/A

5. CONTRACT REFERENCE: C.2.6, C.5.4  
6. REQUIRING OFFICE: AMSTA-TR  
7. DD 250 REQUIRED: Yes  
8. APP CODE: N/A  
9. DISTRIBUTION STATEMENT REQUIRED: No  
10. FREQUENCY: Once  
11. AS OF DATE: N/A  
12. DATE OF FIRST SUBMISSION: 30 Nov 04  
13. DATE OF SUBSEQUENT SUBMISSION: N/A

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14. DISTRIBUTION:

A. ADDRESSEES:	B. COPIES:	DRAFT	FINAL
COTR: Mr. Paul Rogers, TACOM, email: rogersp@tacom.army.mil			1
	15. TOTAL:		1

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16. REMARKS:

The contractor shall develop and deliver to the addressee listed in Block 14 above a Bradley M2 Model by 30 Nov 04, in accordance with Provisions C.2.6 and C.5.4 of the contract. This model shall include a representative internal geometry and internal components that include all major electrical subsystems and their associated thermal characteristics. The model will be provided in a format compatible with Microsoft Windows 2000, Microsoft Office, and Mathead 11. Contractor format is acceptable.

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17. PRICE GROUP: N/A  
18. ESTIMATED TOTAL PRICE: N/A

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1. DATA ITEM: A005  
2. TITLE OF DATA ITEM: Future Combat Systems Model  
3. SUBTITLE: N/A  
4. AUTHORITY: N/A  
5. CONTRACT REFERENCE: C.2.7, C.5.5  
6. REQUIRING OFFICE: AMSTA-TR  
7. DD 250 REQUIRED: Yes  
8. APP CODE: N/A  
9. DISTRIBUTION STATEMENT REQUIRED: No  
10. FREQUENCY: Once  
11. AS OF DATE: N/A  
12. DATE OF FIRST SUBMISSION: 30 May 05  
13. DATE OF SUBSEQUENT SUBMISSION: N/A

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14. DISTRIBUTION:

A. ADDRESSEES:	B. COPIES:	DRAFT	FINAL
COTR: Mr. Paul Rogers, TACOM, email: rogersp@tacom.army.mil			1
	15. TOTAL:		1

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16. REMARKS:

The contractor shall develop and deliver to the addressee listed in Block 14 above a Future Combat Vehicles System (FCS) Model by 30 May 05, in accordance with Provisions C.2.7 and C.5.5 of the contract. The model shall be a full vehicle thermal representation including, but not limited to, power train, survivability technologies, and internal geometry. The internal compartments shall include all major electrical subsystems and their associated thermal characteristics. The survivability technologies shall include Electro-Magnetic Armor, Active Protection systems, Electronic Warfare technologies, and signature reduction technologies. The model will be provided in a format compatible with Microsoft Windows 2000, Microsoft Office, MuSES, and Mathead 11. Contractor format is acceptable.

17. PRICE GROUP: N/A  
18. ESTIMATED TOTAL PRICE: N/A

1. DATA ITEM: A006  
2. TITLE OF DATA ITEM: Presentation Materials  
3. SUBTITLE: N/A  
4. AUTHORITY: DI-ADMN-81373  
5. CONTRACT REFERENCE: C.2.8, C.5.6  
6. REQUIRING OFFICE: AMSTA-TR-R  
7. DD 250 REQUIRED: Yes  
8. APP CODE: N/A  
9. DISTRIBUTION STATEMENT REQUIRED: No  
10. FREQUENCY: See Block 16 below  
11. AS OF DATE: See Block 16 below  
12. DATE OF FIRST SUBMISSION: See Block 16 below  
13. DATE OF SUBSEQUENT SUBMISSION: See Block 16 below

14. DISTRIBUTION:

A. ADDRESSEES:	B. COPIES:	DRAFT	FINAL
COTR: Mr. Paul Rogers, TACOM, email: rogersp@tacom.army.mil		1	1
Mail: U.S. Army TACOM ATTN: AMSTA-TR-R, MS 263 Warren, MI 48397-5000			
	15. TOTAL:	1	1

16. REMARKS:

a. The contractor shall deliver one (1) initial 3-panel display board, by 30 Mar 05. The COTR shall review the 3-panel display board and communicate any comments to the contractor within thirty (30) days of receipt of the 3-panel display board. The contractor shall deliver one (1) final 3-panel display board by 30 Nov 05, upon completion of the contract.

b. The presentation material may be publicly displayed at government locations, or at professional or industry trade shows or conferences.

c. Complete the presentation material in accord with (IAW) DID DI-ADMN-81373, "Presentation Material" and insert Paragraph 10.3 below.

10.3 REQUIREMENT: Contractor shall prepare portable 3-panel display board, approximately 72W x 30H in size.

10.31 Left panel to include: Purpose, Problem, and Procedure.

10.32 Center panel to include: Title, Illustrations/Photos and/or Graphics/Charts

10.33 Right panel to include: Results and Conclusions.



d. See the Data Item Description (DID) DI-ADMIN-81373, at the Internet address listed below, for instructions on completing the required presentation material.

<https://131.82.253.19/docimages/0001/58/88/81373.PD2>

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17. PRICE GROUP: N/A  
18. ESTIMATED TOTAL PRICE: N/A

ATTACHMENT 001

Table 2. Component Models With Associated Special Convection Models

Primitives

Six-sided box: potential natural convection model, with box dimensions and orientation relative to vertical the scalable parameters in the convection model.

Components:

Electronics box: in addition to an external natural convection mode, could have a model for plume impingement from the exhaust of the cooling fan, with port diameter, flow rate, orientation, and position relative to the center of the exhaust port as parameters.

Heat exchanger: depending on the subspecies, correlations relating tube dimensions, spacing, flow area and aspect ratio, tube array configuration.

Pipe: conventional correlations for internal flow, scalable parameters are reynolds number, hydraulic diameter, cross-section aspect ratio, distance in entry lengths from end of tube.

Fluid Loop: same as pipe

Motor: natural or forced convection over motor specific surfaces.

Fluid tank: A six-sided box with internal heat transfer dependent on a 'fluid level'

Sub-Models:

Engine compartment: incorporates an engine model with an underhood environment, a cooling loop containing a radiator, and a special convection model appropriate for natural and/or forced air flow in an enclosed compartment.

Exhaust system: pipe convection for the piping, CFD solution for flow through muffler baffles, with scalable parameters describing baffle 'porosity' spacing.

Headlamp: internal and external natural convection related to shape of headlamp, parameters would include size and shape description of headlamp.

Controls:

Parameters: User-defined values used to define a functional relationship for a heat transfer convection model.